DINOSAURS!

•DISCOVER THE GIANTS OF THE PREHISTORIC WORLD•

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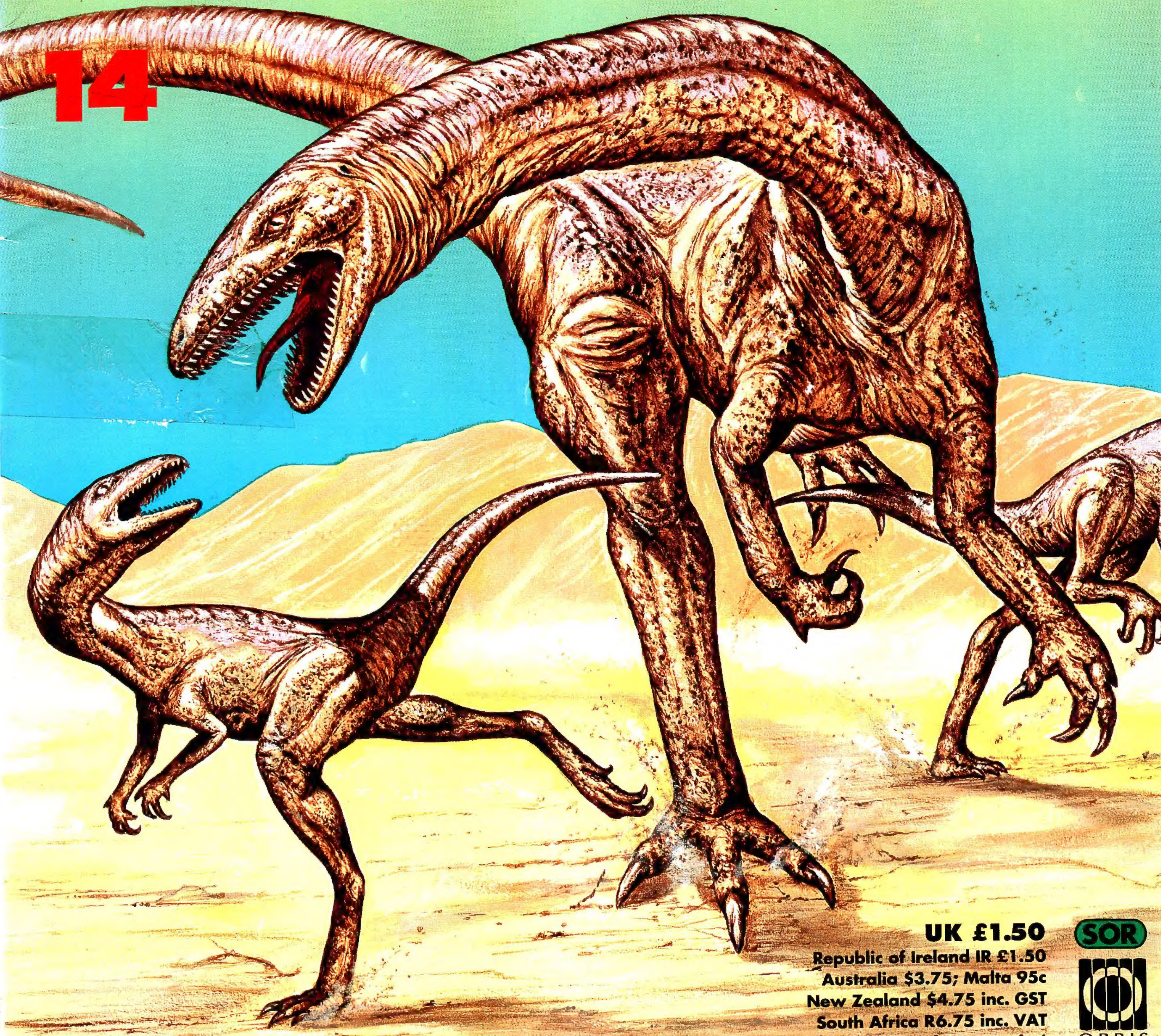

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DINOSAURS!

• DISCOVER THE GIANTS OF THE PREHISTORIC WORLD •

IDENTIKIT

Get to know some more dinosaurs

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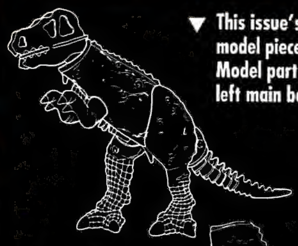
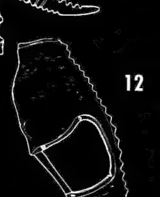
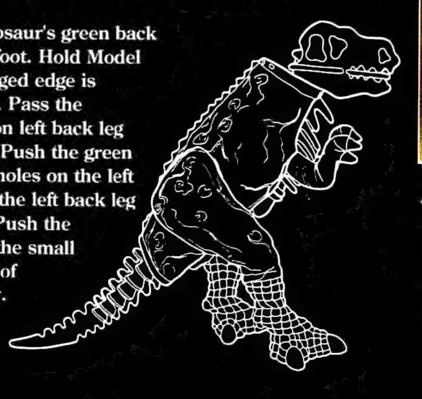


▲ Assembled model from Part 13



▼ This issue's model piece Model part 12 – left main body

Remove your dinosaur's green back left body leg and foot. Hold Model part 12 so the jagged edge is pointing upwards. Pass the dinosaur's skeleton left back leg through the hole. Push the green body leg into the holes on the left main body. Push the left back leg into the left foot. Push the left front leg into the small hole near the top of the left main body.



◀ This issue's assembled model

▲ Your complete *T rex* model

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COELOPHYSIS

Nimble *Coelophysis*, an early dinosaur, may have been a cannibal.

Although *Coelophysis* was almost as tall as a man, it was lightly built for speed and agility. Lizards, amphibians and flying insects all fell victim to this dinosaur.

DINOSAUR GRAVEYARD

In 1947, an expedition to New Mexico, USA, made an amazing discovery. On a property called Ghost Ranch, hundreds of skeletons of *Coelophysis* were found lying across one another.

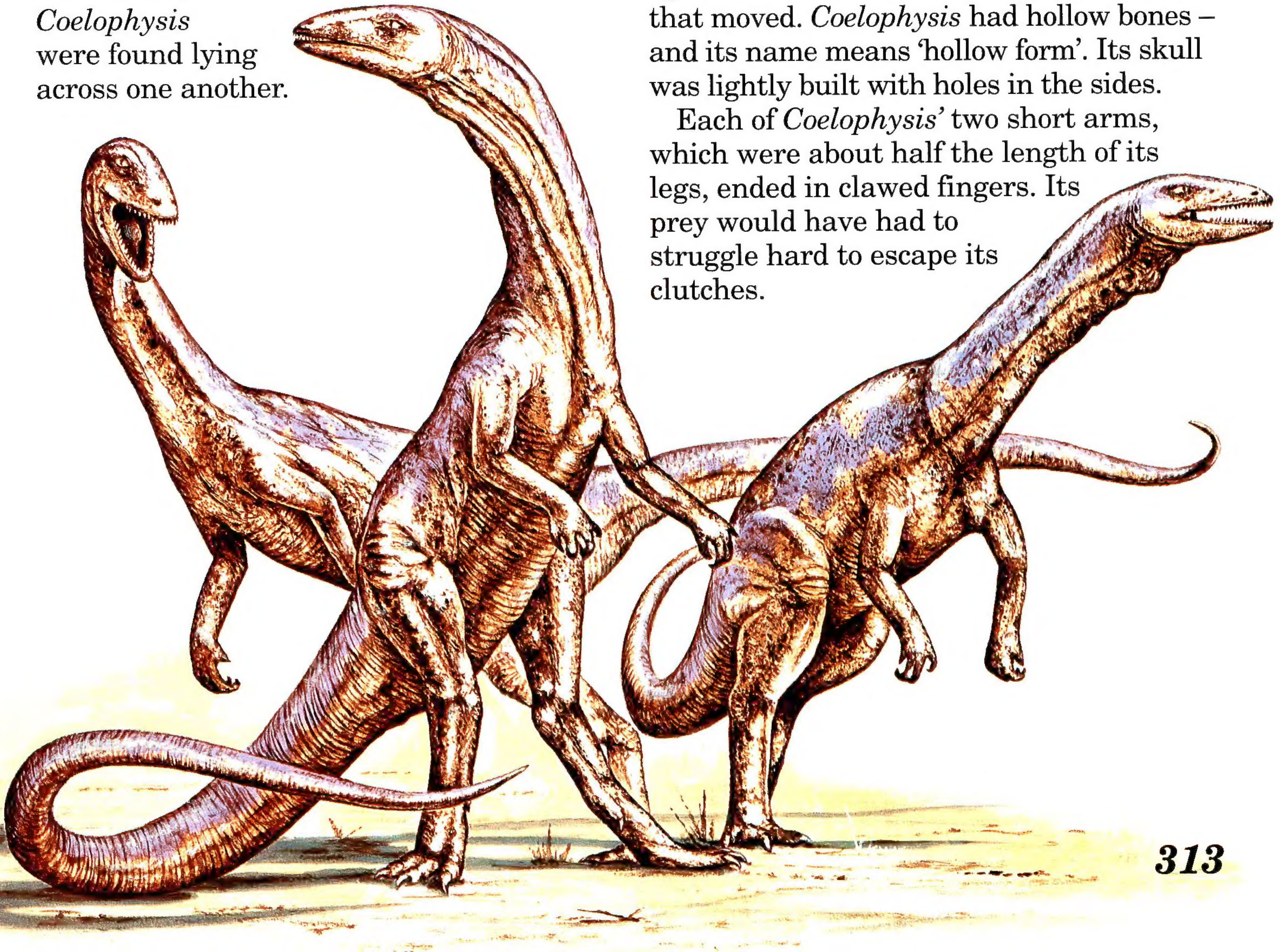
SUDDEN DEATH

The find was particularly exciting because it included *Coelophysis* of different ages and sizes. For the experts, it proved that this dinosaur lived in large groups. The whole herd seemed to have died at the same time. This suggests that their deaths were caused by a sudden calamity, such as a flash flood that overpowered them.

SPEEDY SPRINTER

Almost as tall as an adult human, *Coelophysis* moved quickly on two slim legs. Rather like a modern-day cat, this agile dinosaur chased after anything small that moved. *Coelophysis* had hollow bones – and its name means 'hollow form'. Its skull was lightly built with holes in the sides.

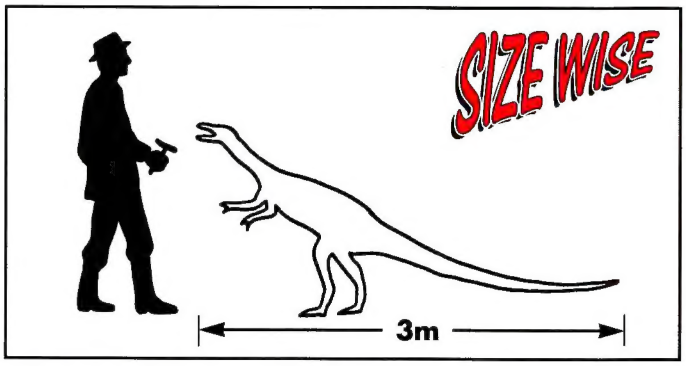
Each of *Coelophysis'* two short arms, which were about half the length of its legs, ended in clawed fingers. Its prey would have had to struggle hard to escape its clutches.



CANNIBAL CLUES

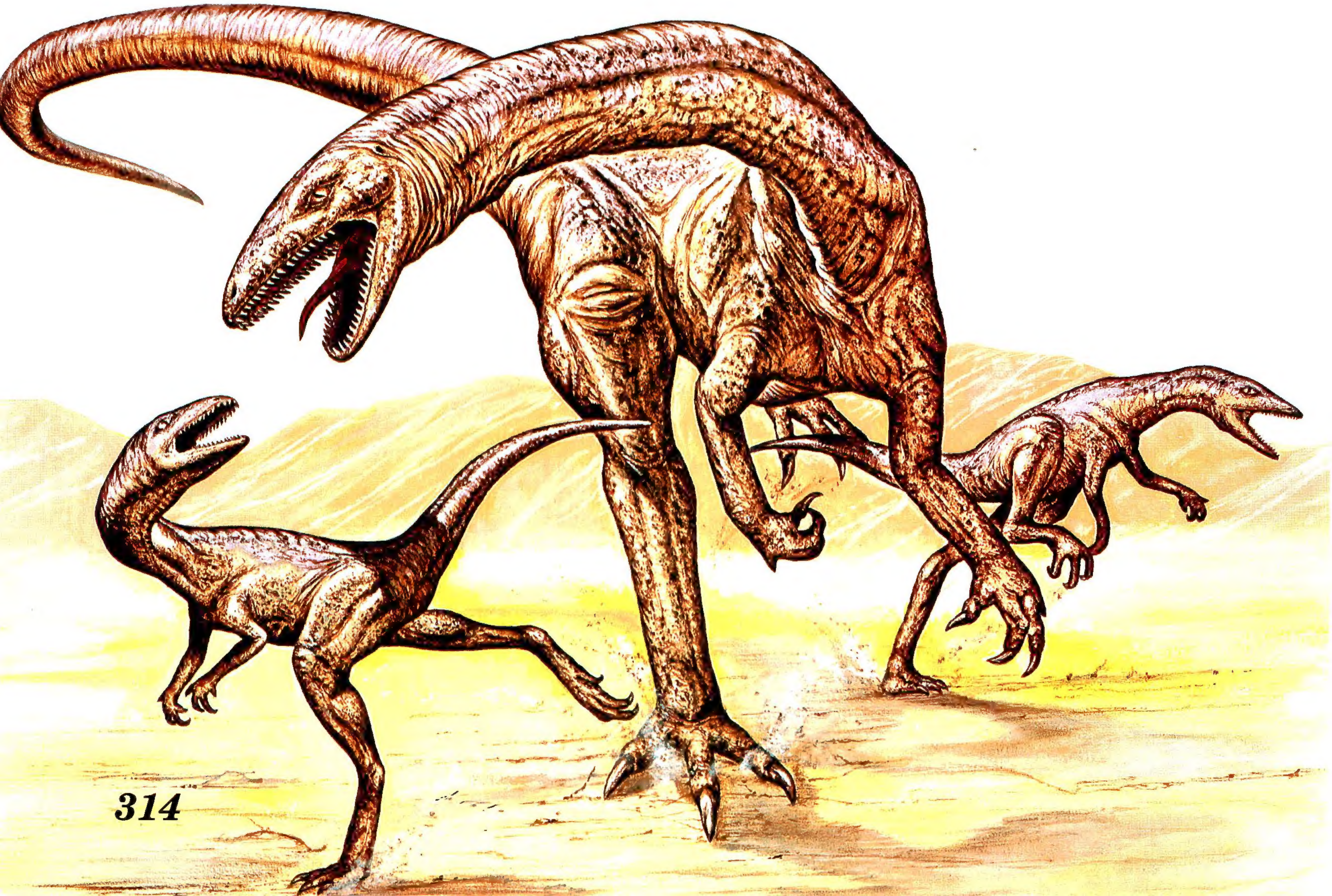
Inside the rib-cages of some of the adults were skeletons of young *Coelophysis*. At first, scientists thought they were babies that were almost ready to be born. However, as dinosaurs laid eggs rather than bearing live young, these skeletons may have been the remains of the dinosaurs' last meal! The skeletons were certainly too big to have come from inside an egg. Although it seems strange, there is a good chance that *Coelophysis* ate not only small lizards, reptiles and mammals, but its own young as well.

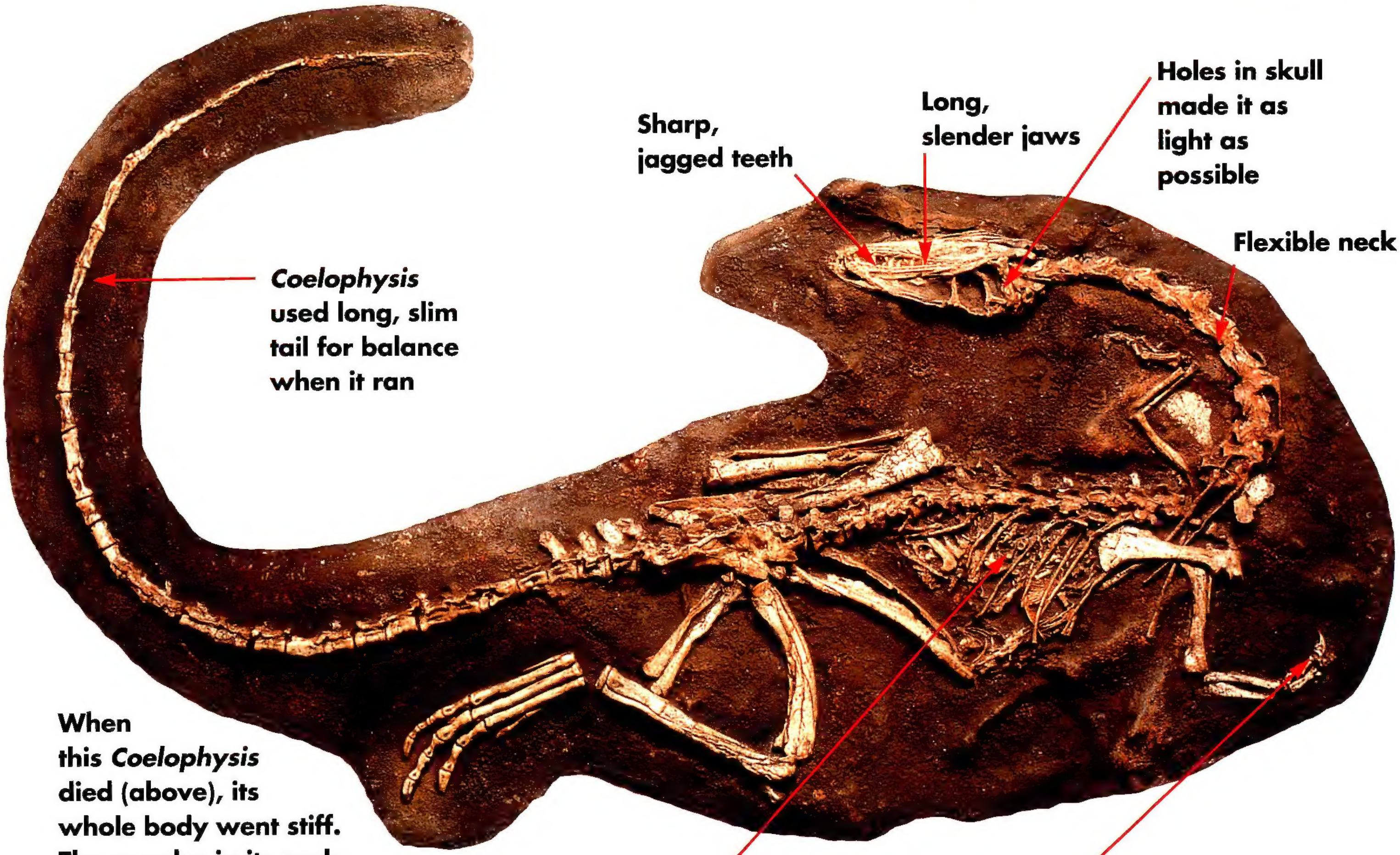
Nobody really knows why *Coelophysis* ate its offspring (below). It is possible that there was a sudden shortage of food and the rest of the herd needed to eat the young to stay alive. Some creatures in the modern animal world eat their young, but only if they have to.



MONSTER FACTS

- **NAME:** *Coelophysis* (seel-oh-fy-sis) means 'hollow form'
- **SIZE:** up to 3m long and about 1.5m high
- **FOOD:** meat – small reptiles and insects. Also possibly its own young
- **LIVED:** 210 million years ago in the Late Triassic in south-western and eastern USA





Sharp, jagged teeth

Long, slender jaws

Holes in skull made it as light as possible

Flexible neck

***Coelophysis* used long, slim tail for balance when it ran**

When this *Coelophysis* died (above), its whole body went stiff. The muscles in its neck dried out and shortened, pulling the head back towards the tail. This is why the fossil looks as if the dinosaur is looking over its shoulder.

Tiny bones of young dinosaur, probably *Coelophysis,* can be seen underneath ribs

Clawed fingers for snatching prey

SNAKE NECK

So that it could spot prey, *Coelophysis* had large eyes and a long, snake-like neck, which was flexible enough to move around quickly. Its head was long and low and its jaws held small, sharp, needle-like teeth with jagged edges.

PERFECTLY PRESERVED

So many skeletons were found at Ghost Ranch that scientists had to be careful not to muddle up the bones of each *Coelophysis*. Many of the jumbled bones were eventually covered up so that two perfect examples of *Coelophysis* stood out from the rest. Copies of these skeletons can be seen today in many dinosaur museums throughout the world.

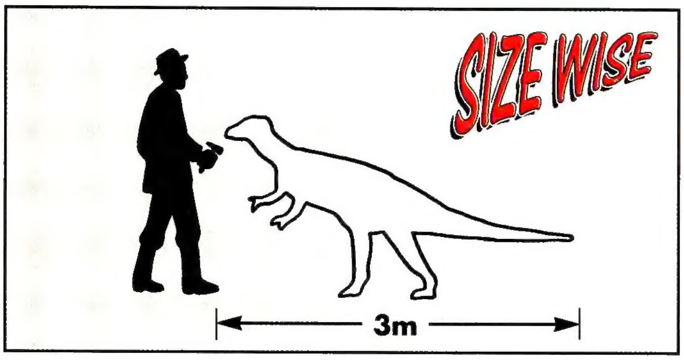
Is it true that some modern-day animals eat their young?

Although it seems cruel, some of today's animals kill their young. They do this because they have to. If there are too many mouths to feed and not enough food, the youngest and weakest in the animal group will be killed and eaten to save the adults, which can go on to breed again. When a new male takes over control of a pride of lions, it sometimes kills the young so that it can mate with a female and produce its own young. Golden hamsters, when kept in cages, may eat their young if they are disturbed.

HOMALOCEPHALE

When the mating season came round, *Homalocephale* had head-to-head pushing contests to see which was the strongest in the herd.

Scientists have a good picture of what this dinosaur looked like as much of its skeleton has been found. *Homalocephale* was about as long as a large male lion and would have stood just above the waist height of a human. It walked on two legs, ate plants and lived in small herds, like modern sheep.



MONSTER FACTS

- **NAME:** *Homalocephale* (hom-al-oh-sef-a-lee) means 'flat head'
- **SIZE:** 3m long and about 1m high
- **FOOD:** low-growing plants
- **LIVED:** 72 million years ago in the Late Cretaceous Period in China and Mongolia

LEVEL-HEADED

Homalocephale is a member of a family of flat-headed dinosaurs. Its broad, thick skull had an important use. When two *Homalocephale* met, they pushed their knobbly heads against each other. It was their way of deciding which of them was in charge. Their strong back and long hind legs worked like cars' shock absorbers, taking the strain of these violent contests.

WIDE HIPS

Unlike many other dinosaurs, *Homalocephale* had very wide hip bones. This led some scientists to suggest that it may not have laid eggs like other dinosaurs, but gave birth to live young instead.

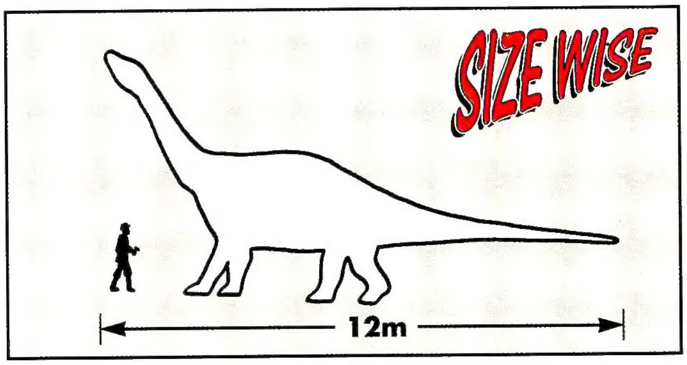
SALTASAURUS

The discovery of this dinosaur was exciting – it was the first plant-eating giant known to have armour.

Longer than a bus, *Saltasaurus* lived on land, but enjoyed an occasional wallow in water like elephants today. This sauropod is known from five incomplete skeletons that were found in the late 1970s.

HUNDREDS OF STUDS

When *Saltasaurus* was found, there were hundreds of bony studs lying by it. Some were as small as a fingernail and others were bigger than a palm of an adult hand.



MONSTER FACTS

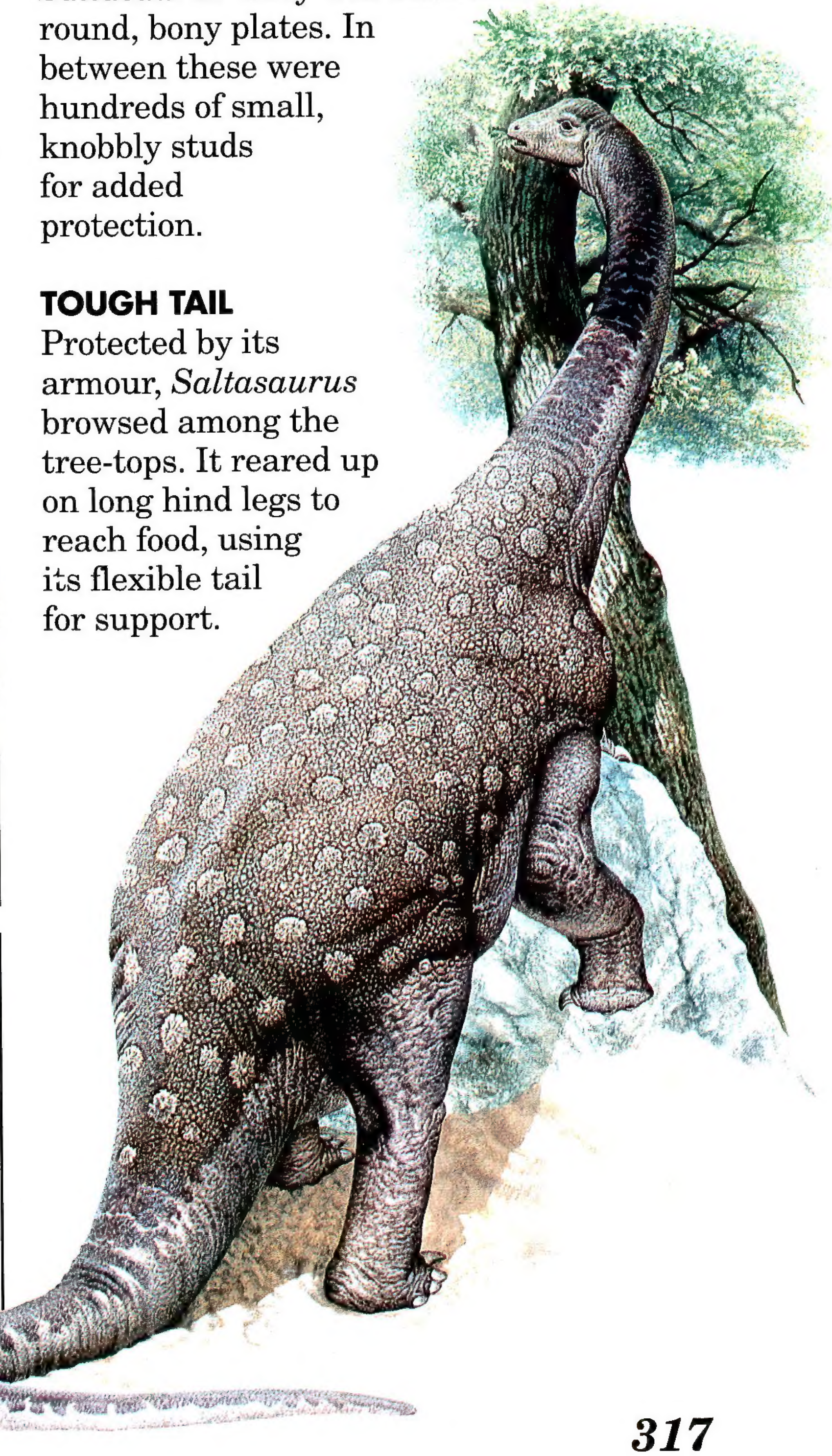
- **NAME:** *Saltasaurus* (salt-a-saw-rus) means 'reptile from Salta', after the place where its remains were discovered
- **SIZE:** 12m long
- **FOOD:** plants and leaves from tall trees
- **LIVED:** 70 – 66 million years ago in the Late Cretaceous in Argentina

BUMPY BODY

The studs were part of the dinosaur's armour. They showed scientists that *Saltasaurus'* body was scattered with round, bony plates. In between these were hundreds of small, knobbly studs for added protection.

TOUGH TAIL

Protected by its armour, *Saltasaurus* browsed among the tree-tops. It reared up on long hind legs to reach food, using its flexible tail for support.



Monster lizards of the deep

About 100 million years ago, giant lizards called mosasaurs ruled the oceans of the world.

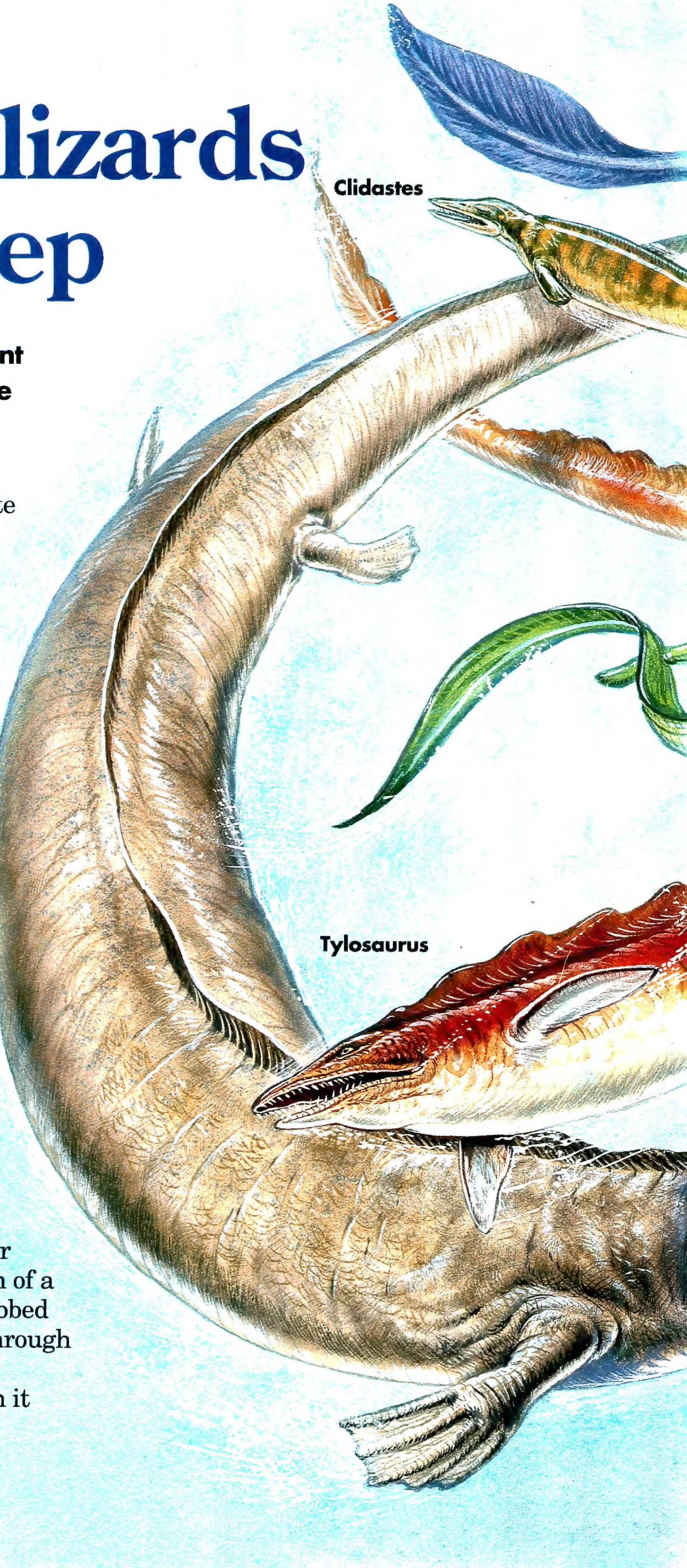
The fierce hunters of the Late Cretaceous seas were not fish, they were lizards. Mosasaurs (mo-za-saws) evolved from *Opetiosaurus* (o-pet-ee-oh-saw-rus), a relation of today's monitor lizard, into 'monsters' like the ones on this page.

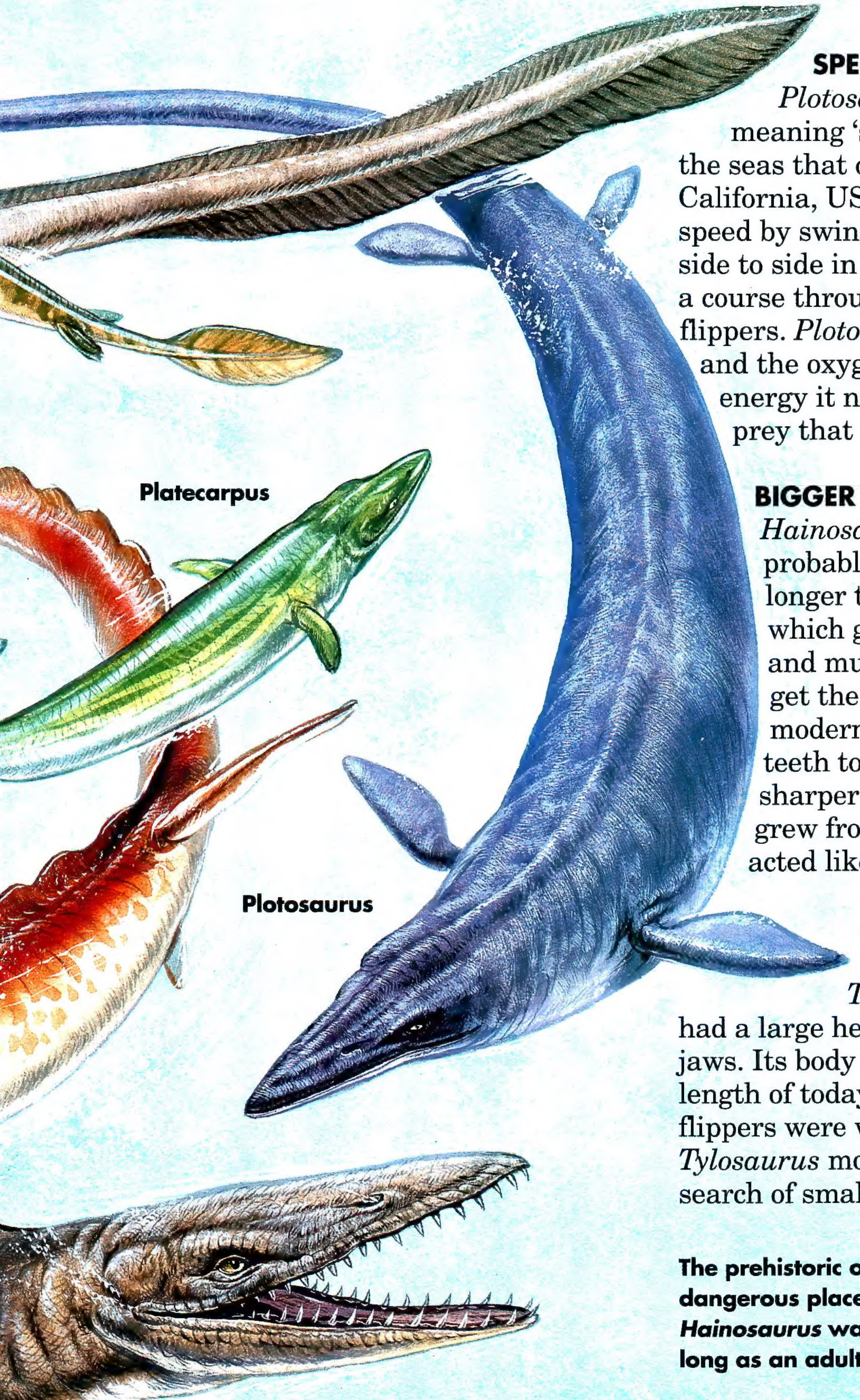
NARROW HEAD

An early mosasaur, *Clidastes* (kly-das-teez), was one of the smallest members of the family. Measuring about 3.5m long, its slim body and narrow head made it streamlined. With a slender tail ending in a broad flipper, *Clidastes* was a fast swimmer. Its flippers were only slightly webbed, so it would not have been particularly good at turning in the water.

KILLER-SIZED

Platecarpus (plat-ee-car-pus), another early mosasaur, was about the length of a killer whale (4m). Equipped with webbed flippers and a finned tail, it moved through the water in snake-like movements. *Platecarpus* ate fish and squid, which it snapped up in sharp-toothed jaws.





SPEEDY TAIL

Plotosaurus (plo-toe-saw-rus), meaning 'swimming lizard', lived in the seas that once covered modern-day California, USA. This lizard built up speed by swinging its broad tail fin from side to side in powerful sweeps. It steered a course through the water using solid flippers. *Plotosaurus'* lungs were efficient and the oxygen it breathed provided the energy it needed to sprint after any prey that strayed across its path.

BIGGER THAN T REX

Hainosaurus (hane-oh-saw-rus) was probably a savage killer. It was longer than land-bound *T rex,* which grew up to 14m in length, and must have eaten lots of food to get the energy it needed. Like modern sharks, it regularly shed teeth to make way for newer, sharper ones. An extra set of teeth grew from the roof of its throat and acted like a trap for unwary fish.

MASSIVE MOUTH

Like other mosasaurs, *Tylosaurus* (tie-lo-saw-rus) had a large head and an impressive pair of jaws. Its body was 8m long, twice the length of today's killer whale, and its flippers were well developed to help *Tylosaurus* move around in the water in search of smaller prey.

The prehistoric oceans would have been a dangerous place for a diver. Massive *Hainosaurus* was almost 10 times as long as an adult woman.

Finding Mosasaurus

The first mosasaur was found over 200 years ago by some men digging by candlelight in a chalk quarry.

What they found was the fossil of a huge jaw. It was discovered in the valley of the River Meuse, in Holland. Because of this, the animal was called 'Meuse lizard', or *Mosasaurus,* and gave its name to the family group.

A NEW THOUGHT

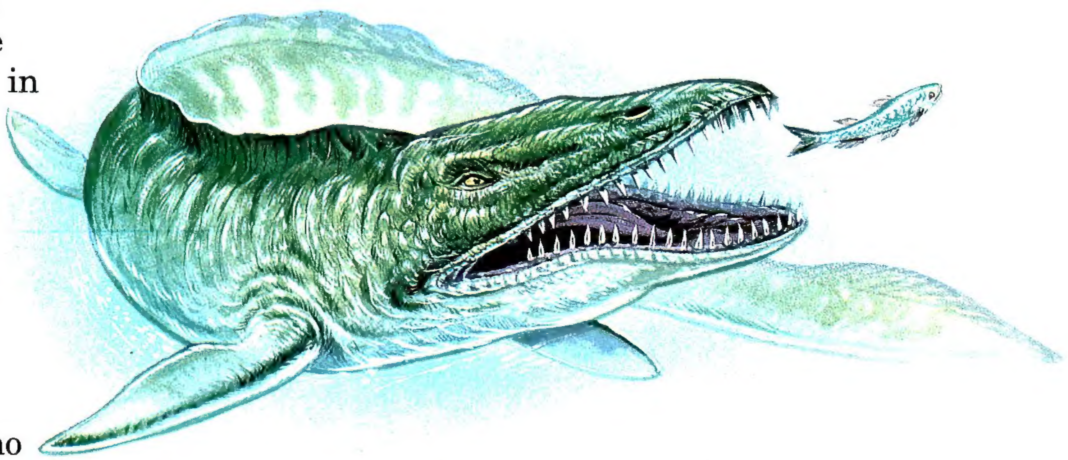
It was a French scientist named Georges Cuvier who decided that the jaw belonged to a sea creature that was no longer alive. Cuvier was one of the first people to suggest that species die out. We now know that different kinds of animals die out all the time, but in those days some scientists thought that this was nonsense.

A WORLD-WIDE SUCCESS

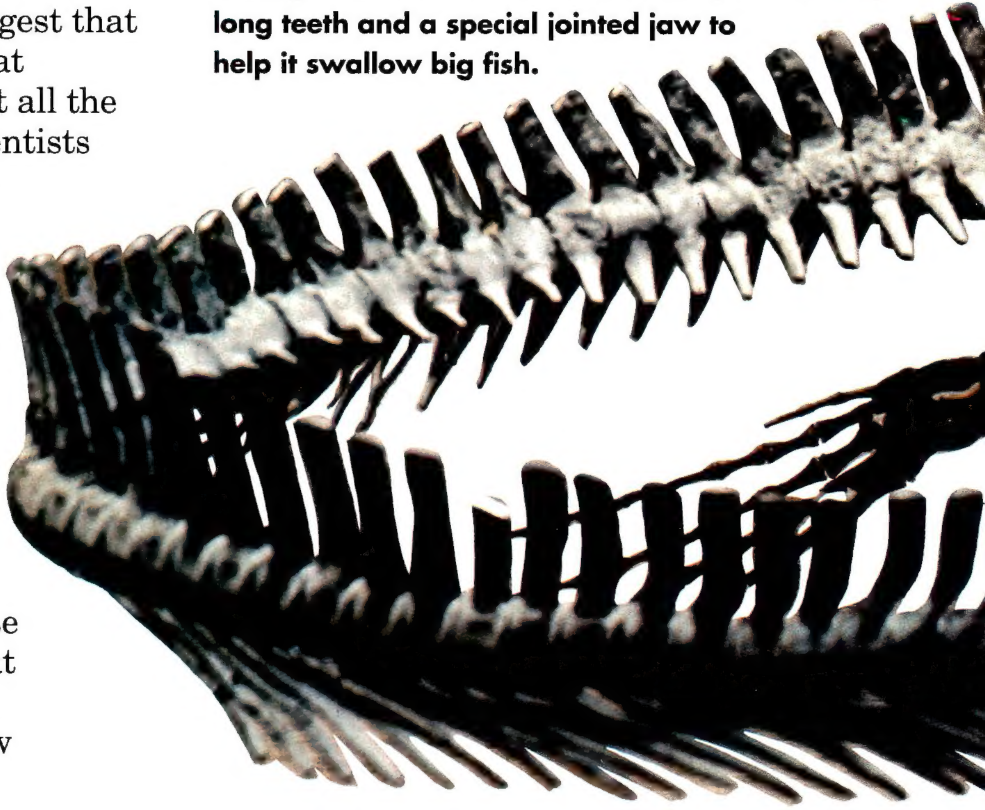
Since the discovery in Holland all those years ago, many other mosasaur fossils have been found across the world. It now seems likely that mosasaurs ruled the Late Cretaceous seas of modern-day North America, Africa and New Zealand, as well as Europe. These world-wide finds have meant that experts have been able to put together a detailed picture of how mosasaurs lived.

BENDY BACKBONE

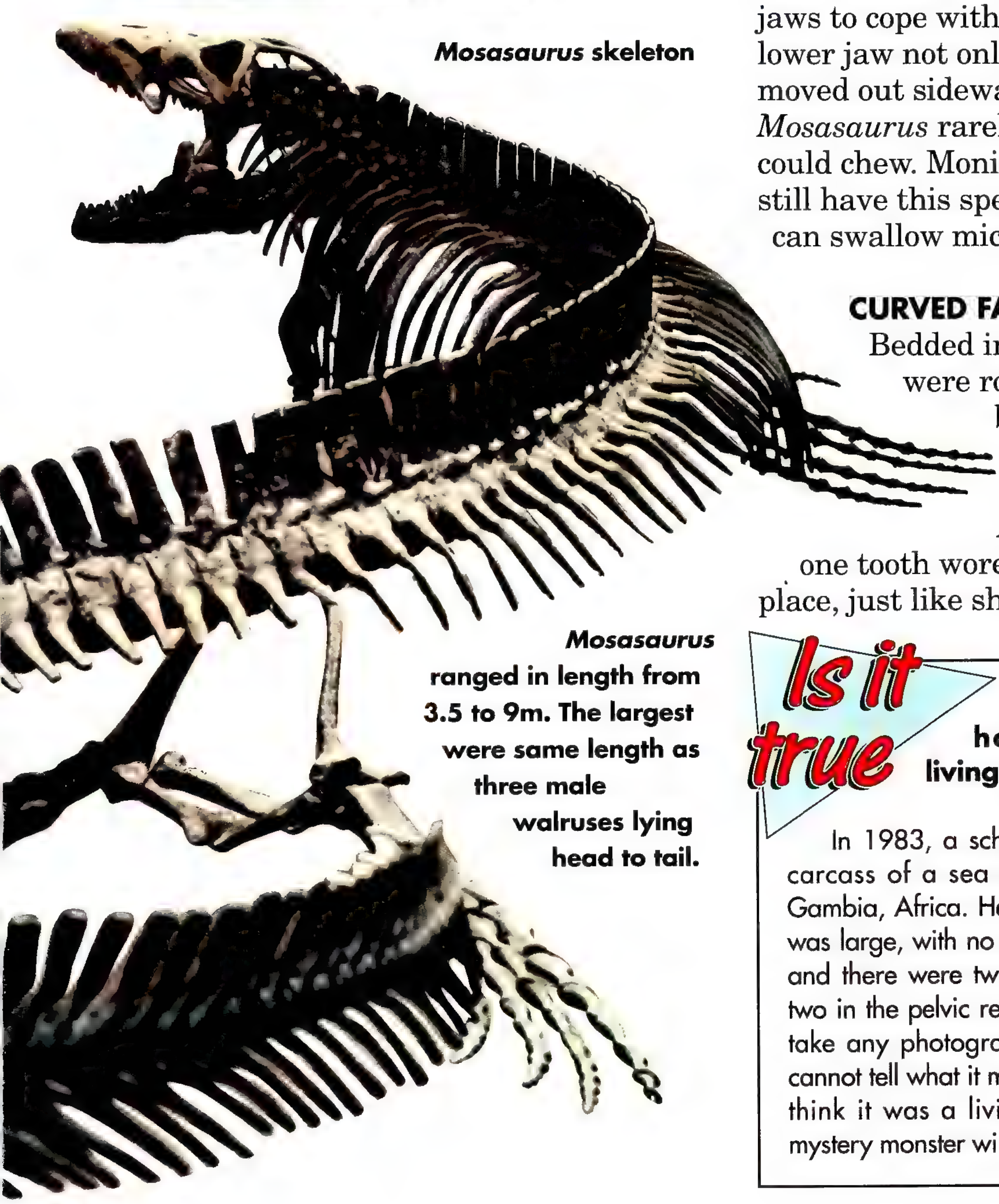
Mosasaurus had about 100 backbones – four times as many as a human. Each vertebra was joined to the next by a flexible ball-and-socket joint, allowing *Mosasaurus* to move in the water like eels.



***Mosasaurus* was built to hunt fish and glide through the water. It had a flat head, short neck, long teeth and a special jointed jaw to help it swallow big fish.**



Baron Cuvier (left) 'invented' the idea of extinct animals and has since become known as the father of modern palaeontology. In spite of modern technology, many of his methods are still used. Today, we know that changing conditions cause animals to become extinct all the time.



***Mosasaurus* skeleton**

***Mosasaurus* ranged in length from 3.5 to 9m. The largest were same length as three male walruses lying head to tail.**

OPEN WIDER

Like other mosasaurs, *Mosasaurus* had special jaws. Half way along its lower jaw was an extra joint. This let it expand its jaws to cope with big mouthfuls of food. Its lower jaw not only dropped lower, but moved out sideways too. This meant that *Mosasaurus* rarely bit off more than it could chew. Monitor lizards and snakes still have this special jaw hinge. Snakes can swallow mice and rats in one go.

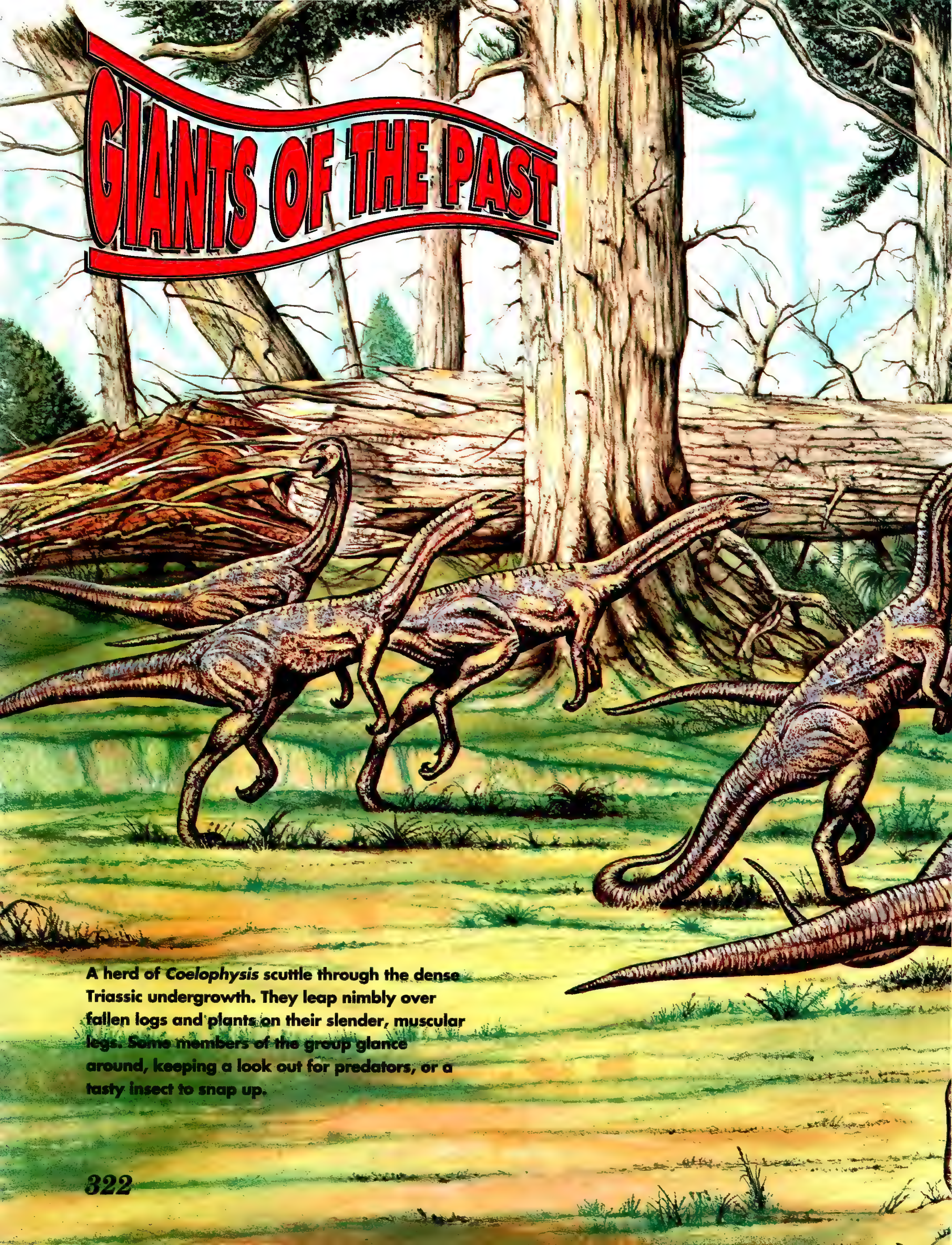
CURVED FANGS

Bedded into these special jaws were rows of teeth that curved backwards. They were sharp enough to cut through any fish that *Mosasaurus* caught. As one tooth wore down another grew in its place, just like sharks' teeth today.

Is it true that a schoolboy on holiday once found the living fossil of a mosasaur?

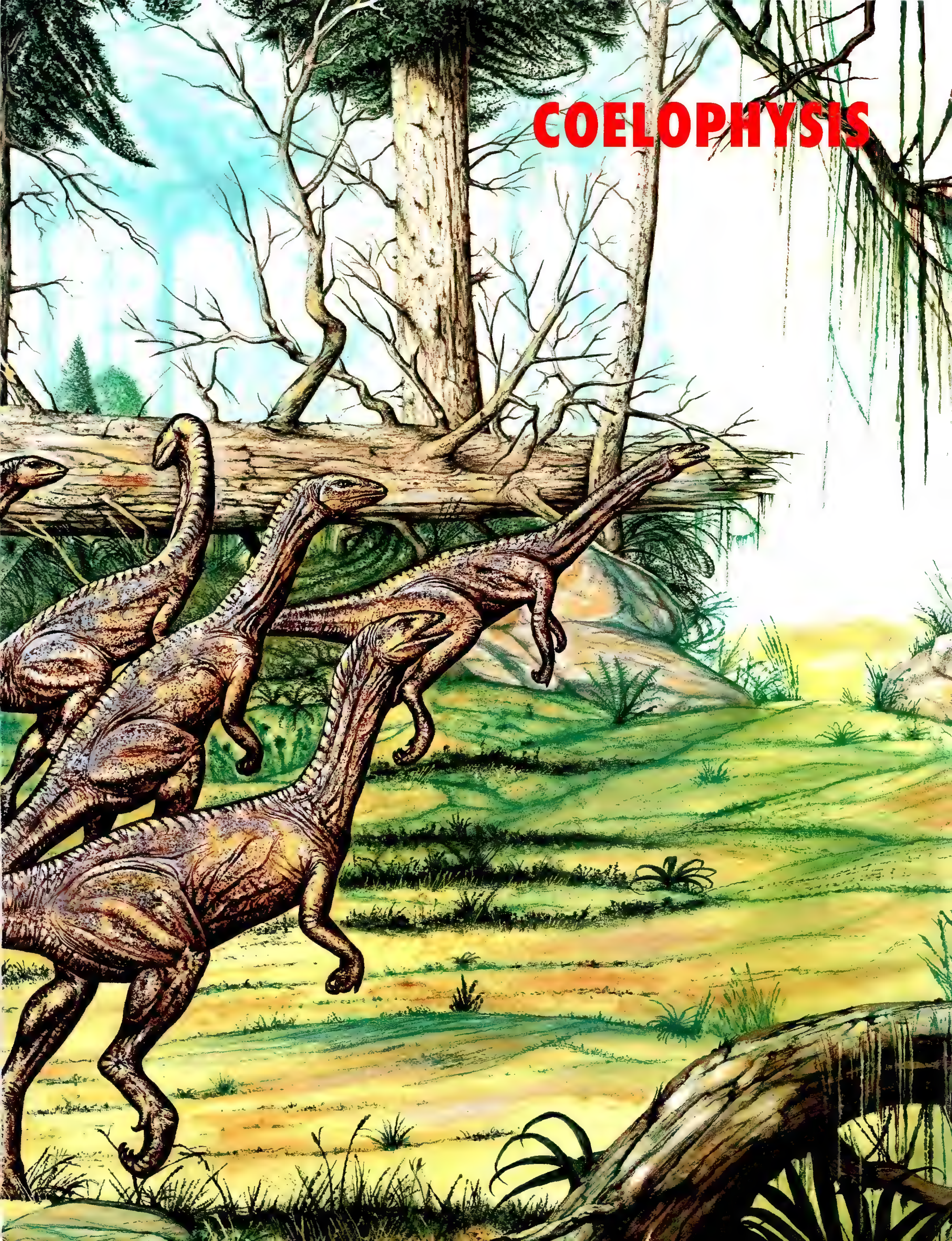
In 1983, a schoolboy from Britain found the carcass of a sea creature while on holiday in Gambia, Africa. He described it like this: 'Its body was large, with no blow-hole and no distinct neck, and there were two flippers behind its head and two in the pelvic region.' Unfortunately, he did not take any photographs of the animal, so experts cannot tell what it might have been. However, some think it was a living fossil of a mosasaur. The mystery monster will probably never be identified.

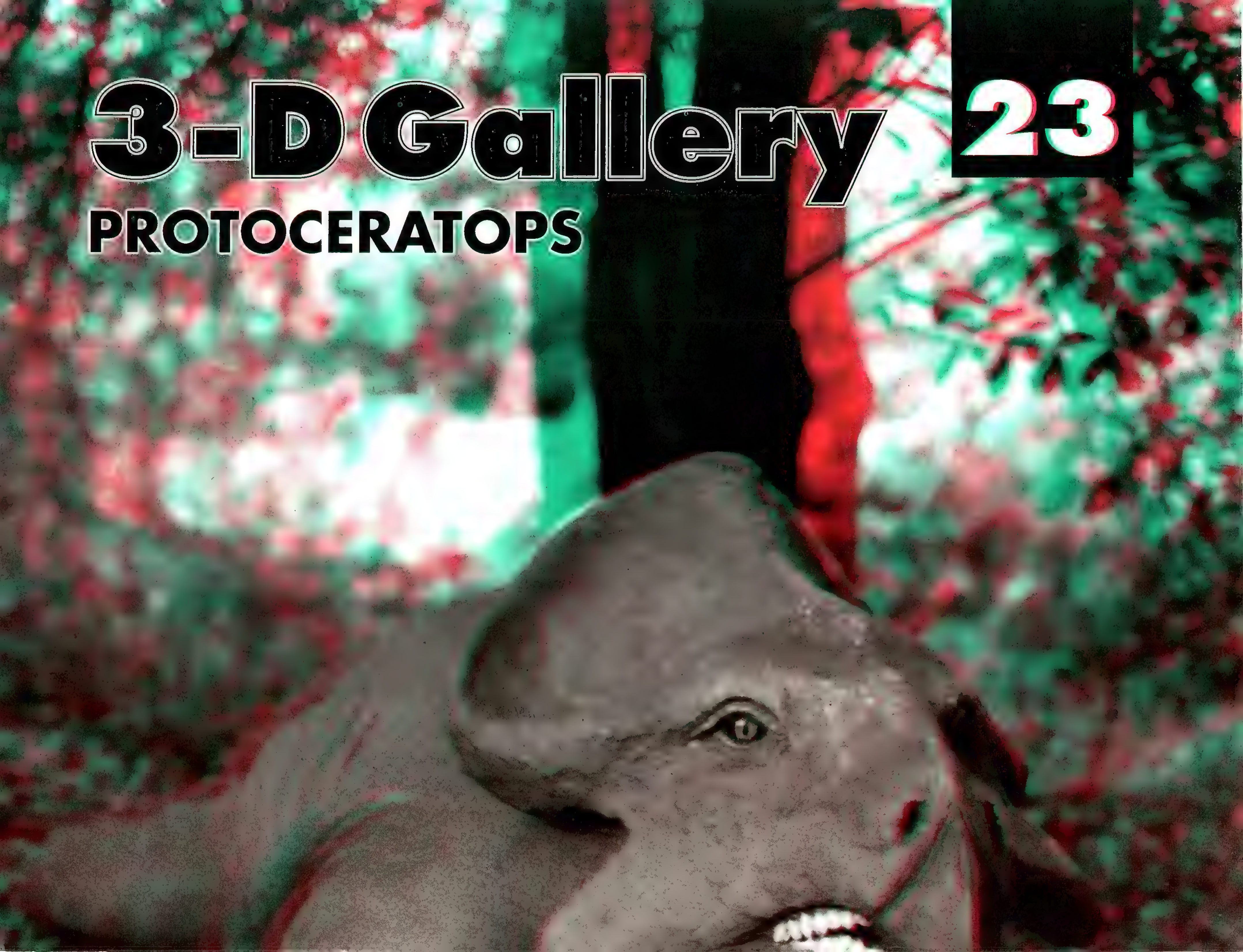
GIANTS OF THE PAST



A herd of *Coelophysis* scuttle through the dense Triassic undergrowth. They leap nimbly over fallen logs and plants on their slender, muscular legs. Some members of the group glance around, keeping a look out for predators, or a tasty insect to snap up.

COELOPHYSIS





3-D Gallery

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PROTOCERATOPS

- Four-legged dinosaur with bony frill
- Lived about 80 million years ago in China and Mongolia
- Measured 1.8m long
- Ate plants

A hip discovery

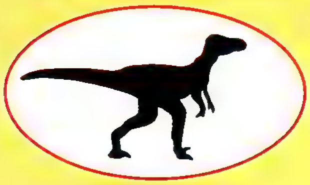
Dinosaurs are divided into two major groups because of the difference in the shape of their hip bones.

Until about 100 years ago, scientists thought that one dinosaur was much like the next. That is, until 1887, when Professor Harry Govier Seeley made an important discovery. He saw that there were two basic groups of dinosaur. And the difference between them was – their hips!

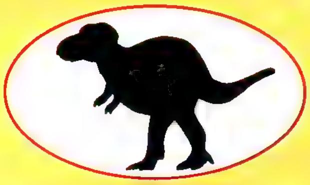
A GIANT LEAP

The hip bones of one group of dinosaurs were a different shape from the hip bones of the other. This really was a big discovery. It meant that scientists could arrange all the different types of dinosaurs into two groups, or 'orders'. An order is one of the names that scientists give to a specific group of animal.

SAURISCHIA – LIZARD HIPS

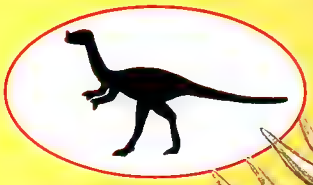


Velociraptor



Albertosaurus

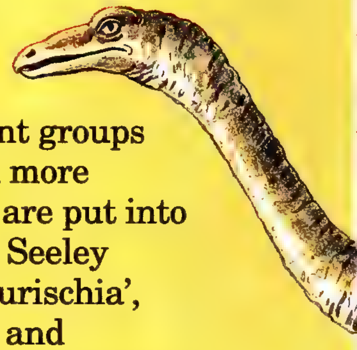
Diplodocus

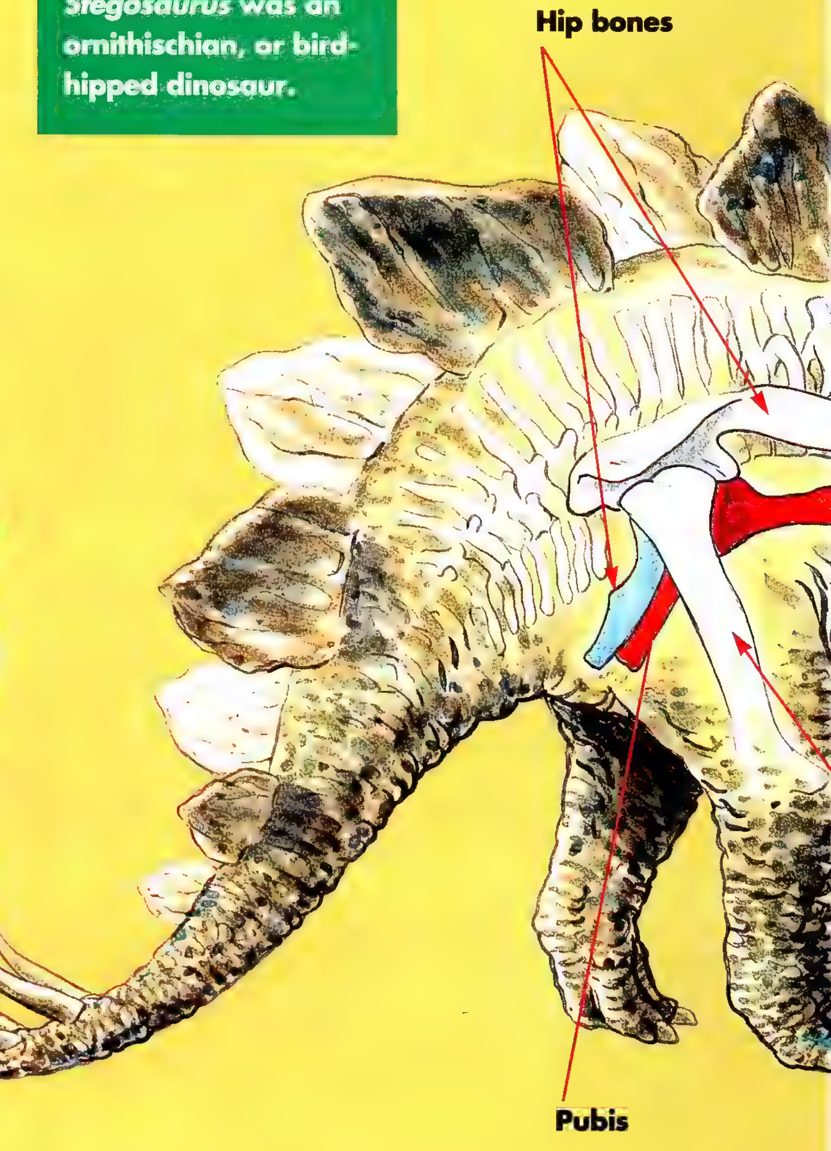


Oviraptor

NAMING THE GROUPS

It is important for scientists to classify (arrange) animals in different groups so that they can study them more easily. Modern-day animals are put into groups, too. The orders that Seeley discovered are known as 'saurischia', which means lizard-hipped, and 'ornithischia', which means bird-hipped.





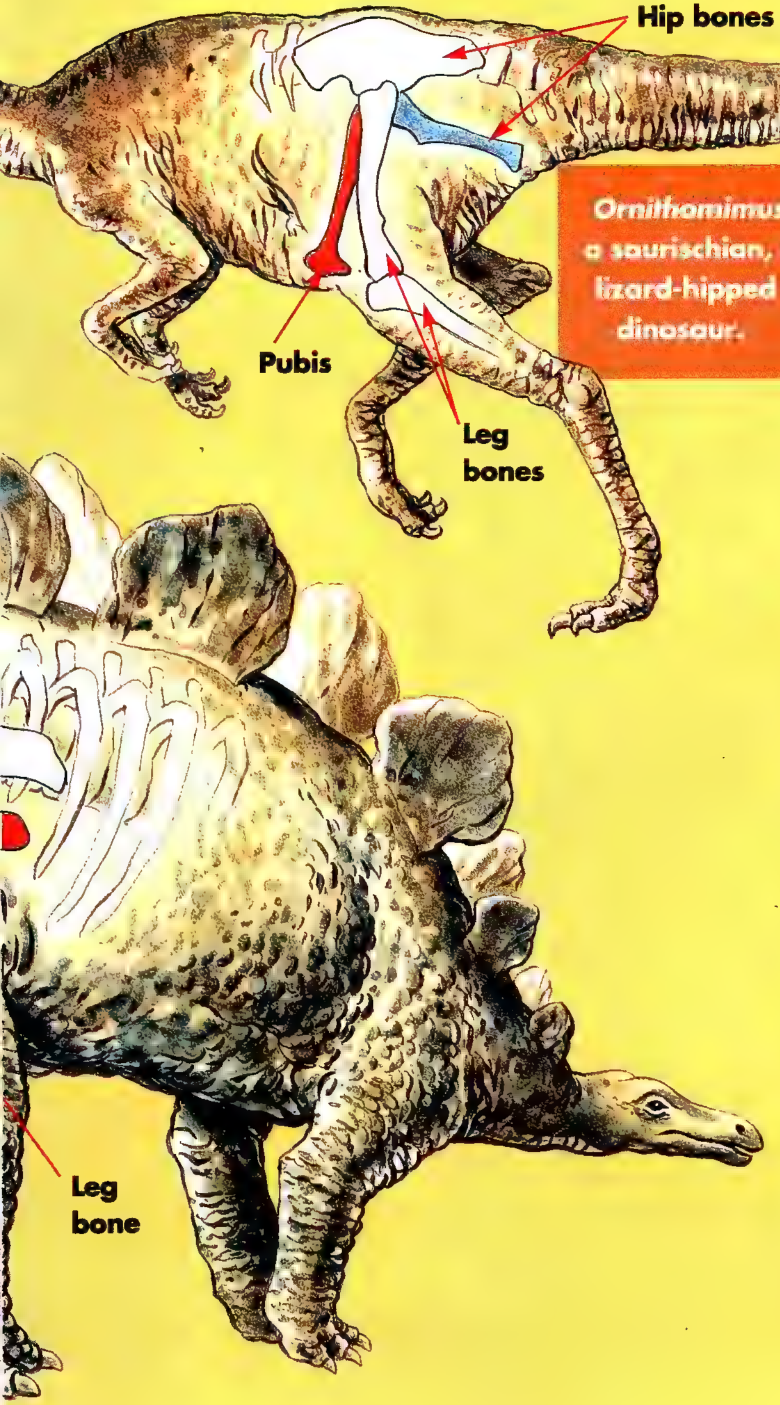
Stegosaurus was an ornithischian, or bird-hipped dinosaur.

LIZARD HIPS

The saurischia (saw-riss-kee-a) were named because their hip bones were similar to those of lizards. Their front hip bone, or pubis, pointed forward.

BIRD HIPS

The ornithischia (or-ni-thiss-kee-a) were given their name because their hip bones were more like those of birds. The pubis pointed backward.



Ornithomimus was a saurischian, or lizard-hipped dinosaur.

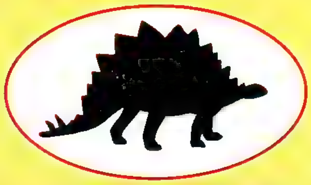
NOT ALL THE SAME

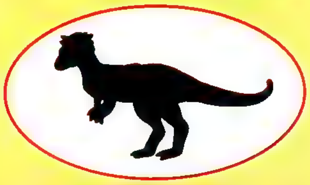
The dinosaurs in each of the two orders did not look alike – they did not even walk on the same number of legs. The lizard-hipped group were either two-footed meat-eaters (theropods) like *Tyrannosaurus rex* and *Albertosaurus,* or huge four-footed plant-eaters such as *Diplodocus.*

SUCCESSFUL BIRD HIPS

The bird-hipped dinosaurs all had horny beaks. Some, such as *Hypsilophodon,* walked on two legs and were lightly built so that they could run fast. Others, like *Triceratops,* were much heavier and walked on four legs. They were different from the lizard hips in other ways, too. Ornithischians were herbivores, which meant that they ate only plants. At the end of the Age of the Dinosaurs, there were more bird-hipped than lizard-hipped dinosaurs.

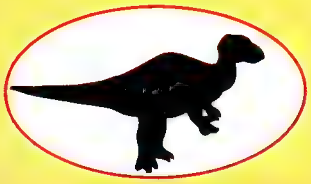
ORNITHISCHIA – BIRD HIPS


Stegosaurus


Stygimoloch

Triceratops

Edmontonia


Iguanodon

The joined-together reptiles

Heavily armoured from head to tail, the ankylosaurs ('joined-together reptiles') were the tanks of the dinosaur world.

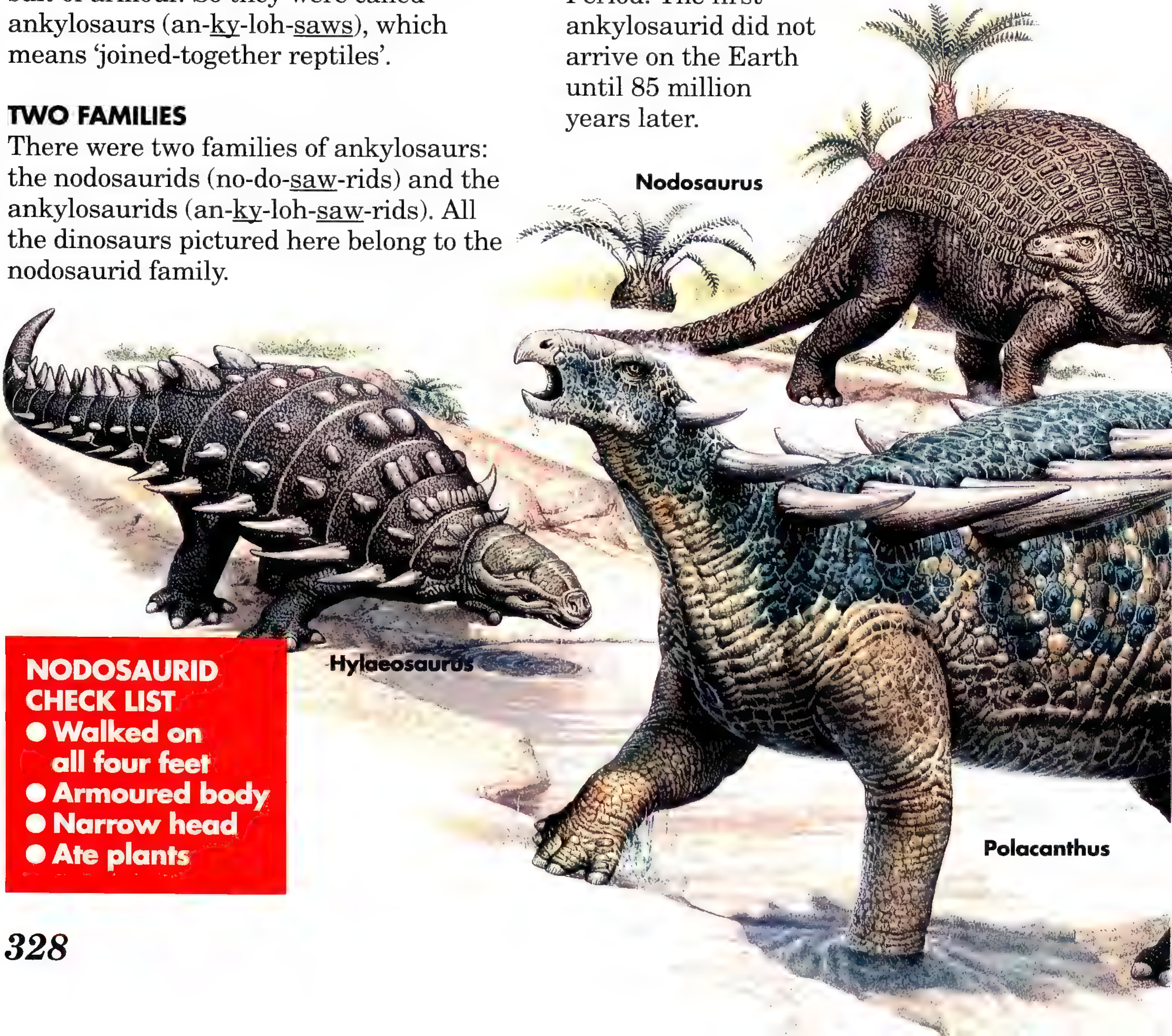
These fearsome-looking dinosaurs had bones in their skin that fitted together like a suit of armour. So they were called ankylosaurs (an-ky-loh-saws), which means 'joined-together reptiles'.

TWO FAMILIES

There were two families of ankylosaurs: the nodosaurids (no-do-saw-rids) and the ankylosaurids (an-ky-loh-saw-rids). All the dinosaurs pictured here belong to the nodosaurid family.

FIRST ON THE SCENE

The first nodosaurid lived 180 million years ago, during the Middle Jurassic Period. The first ankylosaurid did not arrive on the Earth until 85 million years later.



NODOSAURID CHECK LIST

- Walked on all four feet
- Armoured body
- Narrow head
- Ate plants

NODOSAURID DATES

Polacanthus lived in the Early Cretaceous, 120 million years ago. *Sauropelta* (saw-roh-pelt-ah) appeared about 10 million years later. *Nodosaurus* (no-do-saw-rus), *Struthiosaurus* (strooth-ee-oh-saw-rus) and *Panoplosaurus* (pan-o-plo-saw-rus) all lived in the Late Cretaceous Period. *Panoplosaurus* was the last known nodosaurid. It was alive right at the end of the Age of the Dinosaurs.

LUMPS AND BUMPS

Very few nodosaurid fossils have been found, but experts think these dinosaurs looked a bit like giant armadillos. They probably had low, barrel-like bodies and short, powerful legs. *Nodosaurus,* which gave its name to the family, means 'knobbly reptile'. All the nodosaurids were covered with knobbly armour. Some were also studded with long, sharp spikes.

IT'S A FACT

DWARF DINOSAURS

Three other types of dinosaur were found in the same area as the nodosaurid *Struthiosaurus* and they were all much smaller than normal dinosaurs. Experts believe these tiny types of dinosaur might all have lived on a small island and over millions of years gradually shrunk to fit their habitat better.

LONG AND SHORT

Sauropelta was the biggest nodosaurid. It was about as tall as a hippopotamus and up to 8m long, about the same length as a 24-seater bus. *Struthiosaurus* was the baby of the family. It was a dwarf dinosaur, no taller than a medium-sized dog and about 1.8m long. That's almost the same length as a man lying down.

BATTLE PLANS

Nodosaurids were peaceful plant-eaters. They were not very big and their bony armour was their only protection against giant meat-eating dinosaurs. When attacked, they might have behaved a bit like the modern-day tortoise, which protects its head and legs by pulling them inside its shell. Nodosaurids did not have shells, but they probably defended themselves by crouching down and huddling under the thick shield of their armour plating. Nodosaurids were heavy and it would have been difficult to tip them over. Most attackers probably gave up and went off in search of easier prey.

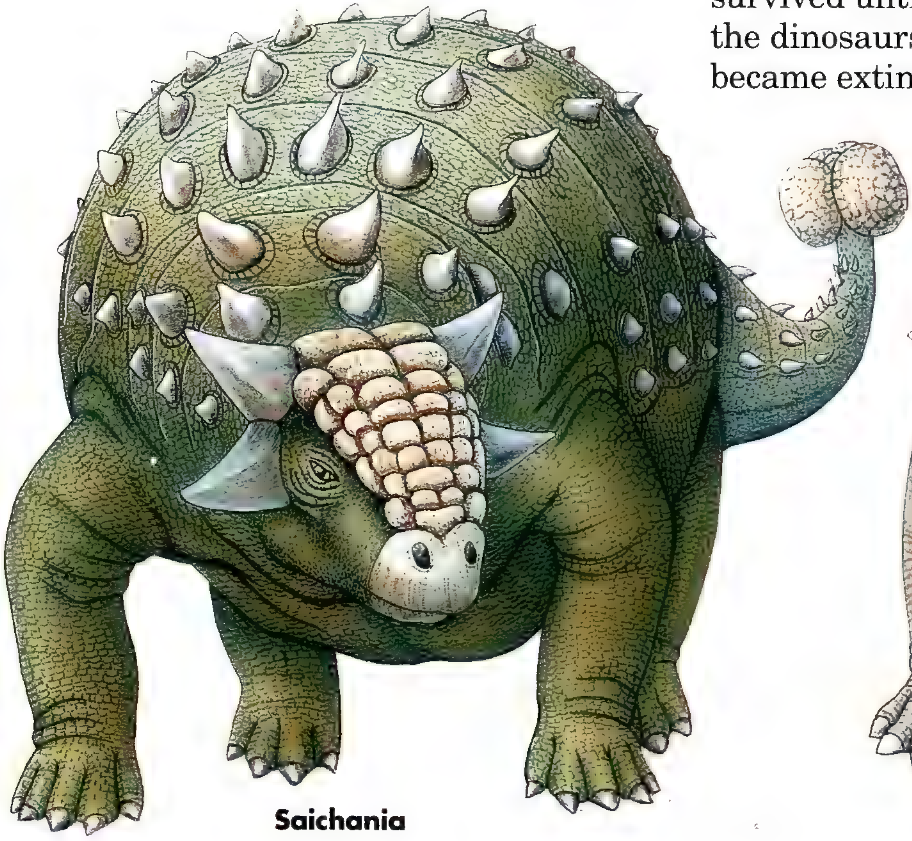
All about ankylosaurids

The dinosaurs pictured here are ankylosaurids. Like nodosaurids, they were covered in bony armour, but they also had clubbed tails.

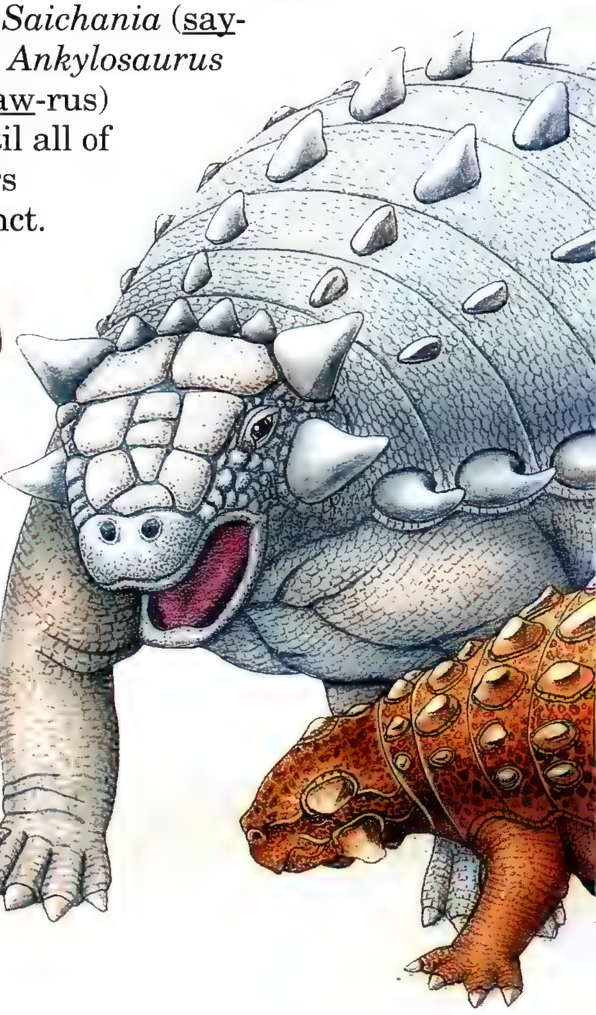
Ankylosaurids had broader heads and fewer spikes than nodosaurids. Most important, they had a powerful weapon – a mighty, club-ended tail. Their tail clubs were huge and heavy, and were made out of chunks of bone joined together into one great lump. An ankylosaurid protected itself by swinging its tail at an attacker. A well-aimed blow could have toppled *T rex*.

IN AT THE END

Ankylosaurids roamed the Earth towards the end of the Age of the Dinosaurs, in the Late Cretaceous. However, they did not all live at the same time. *Euoplocephalus* (you-oh-plo-seff-a-lus) and *Pinacosaurus* (pine-ak-oh-saw-rus) lived 5 million years before *Saichania* (say-kha-nee-ah). *Ankylosaurus* (an-ky-loh-saw-rus) survived until all of the dinosaurs became extinct.



Saichania



HIGH AND LOW

Ankylosaurus was the last and largest ankylosaurid. It was about as tall as an elephant and up to 10m long, about the same as the wing-span of a small plane. *Saichania* grew up to 7m long. *Euoplocephalus* measured 6m long and *Pinacosaurus* was slightly shorter at 5m.

BONE HEADS

Ankylosaurids had incredibly thick head armour made out of huge slabs of bone. *Euoplocephalus* even had bony eyelids. They must have snapped shut a bit like steel shutters to protect its eyes from the claws of an attacker.

ANKYLOSAURID CHECK LIST

- Broad head
- Club-tail
- Armoured body
- Ate plants
- Walked on all fours

Is it true that the ankylosaurids were slow movers?

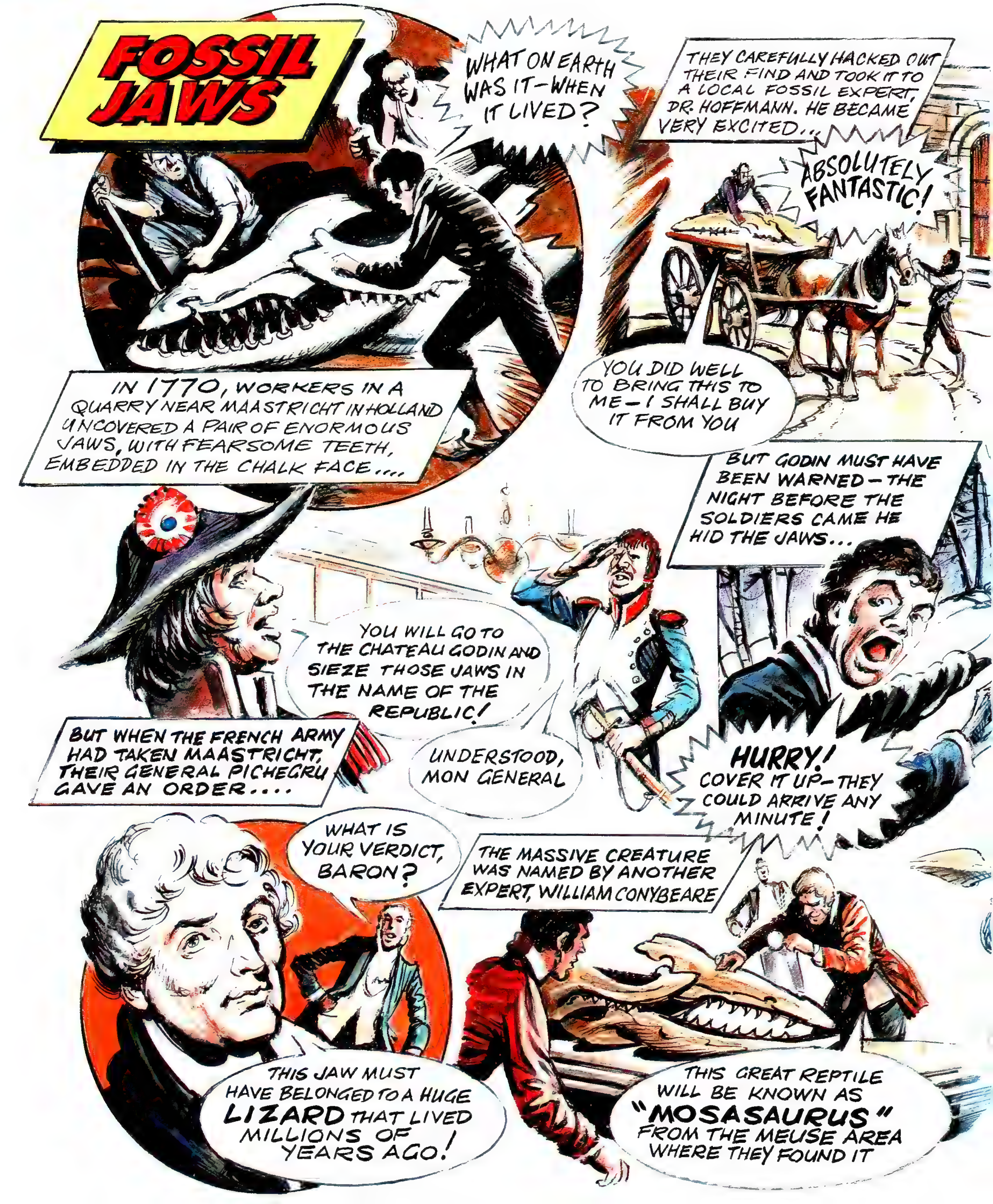
Probably not. Ankylosaurids were built like tanks, but they did not crawl along. Scientists believe that these dinosaurs were quite quick on their feet. They probably moved more like a modern rhinoceros and could charge at a frightening speed.

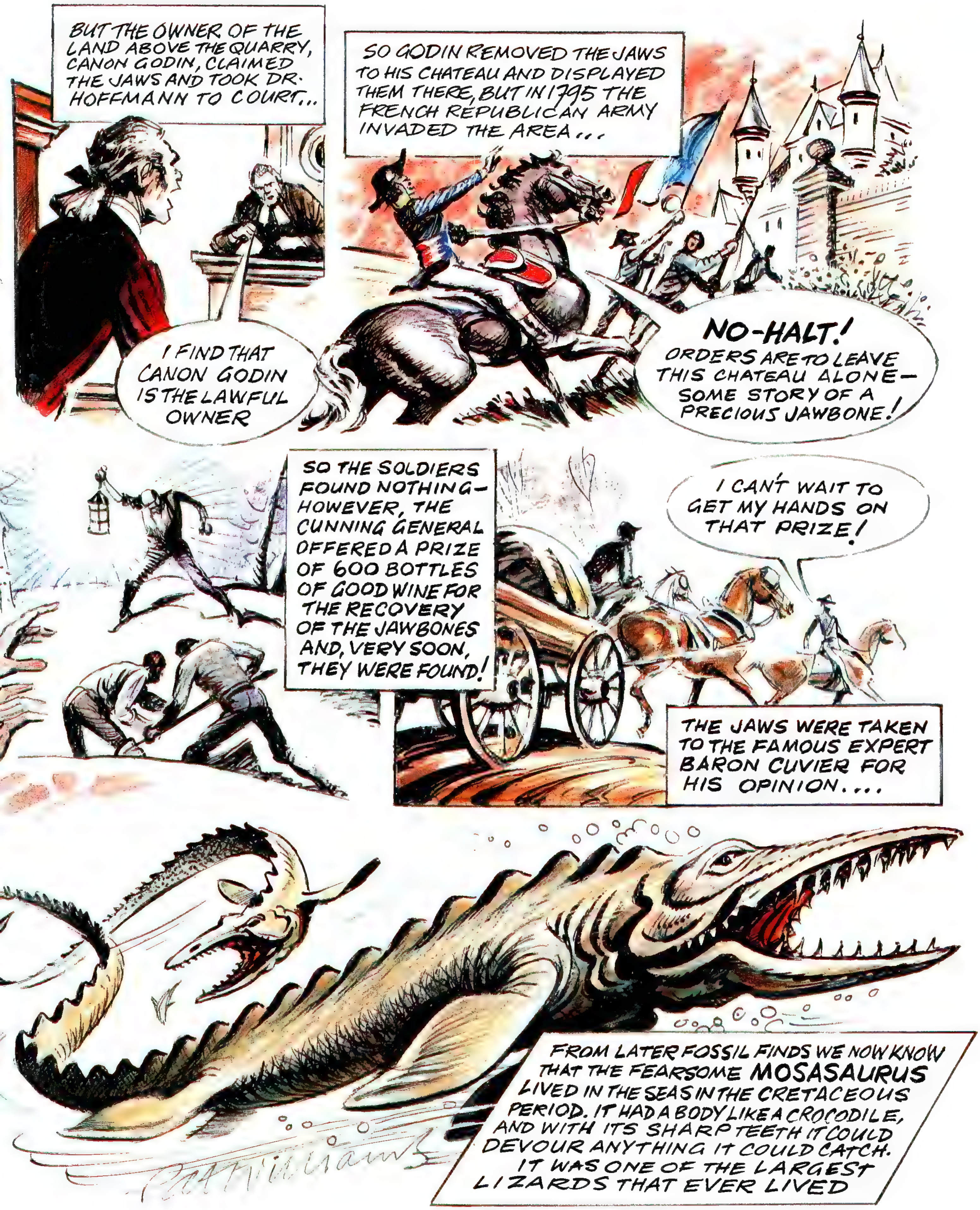
WHERE IN THE WORLD?

So far, fossils of ankylosaurids have only been found in Mongolia, China and western North America. However, the nodosaurids lived in many more places. A nodosaurid has even been found in Australia and few dinosaurs have been found in Australia up to now.

But, wherever they lived, all the ankylosaurids ate plants. One of them, *Pinacosaurus*, had such small, weak teeth that it must have survived by eating only the very softest parts of plants.

FOSSIL JAWS


IN 1770, WORKERS IN A QUARRY NEAR MAASTRICHT IN HOLLAND UNCOVERED A PAIR OF ENORMOUS JAWS, WITH FEARSOME TEETH, EMBEDDED IN THE CHALK FACE....
WHAT ON EARTH WAS IT–WHEN IT LIVED?
THEY CAREFULLY HACKED OUT THEIR FIND AND TOOK IT TO A LOCAL FOSSIL EXPERT, DR. HOFFMANN. HE BECAME VERY EXCITED...
ABSOLUTELY FANTASTIC!
YOU DID WELL TO BRING THIS TO ME–I SHALL BUY IT FROM YOU
BUT WHEN THE FRENCH ARMY HAD TAKEN MAASTRICHT, THEIR GENERAL PICHEGRU GAVE AN ORDER....
YOU WILL GO TO THE CHATEAU GODIN AND SIEZE THOSE JAWS IN THE NAME OF THE REPUBLIC!
UNDERSTOOD, MON GENERAL
BUT GODIN MUST HAVE BEEN WARNED–THE NIGHT BEFORE THE SOLDIERS CAME HE HID THE JAWS...
HURRY! COVER IT UP–THEY COULD ARRIVE ANY MINUTE!
WHAT IS YOUR VERDICT, BARON?
THIS JAW MUST HAVE BELONGED TO A HUGE LIZARD THAT LIVED MILLIONS OF YEARS AGO!
THE MASSIVE CREATURE WAS NAMED BY ANOTHER EXPERT, WILLIAM CONYBEARE
THIS GREAT REPTILE WILL BE KNOWN AS "MOSASAURUS" FROM THE MEUSE AREA WHERE THEY FOUND IT


BUT THE OWNER OF THE LAND ABOVE THE QUARRY, CANON GODIN, CLAIMED THE JAWS AND TOOK DR. HOFFMANN TO COURT...
I FIND THAT CANON GODIN IS THE LAWFUL OWNER
SO GODIN REMOVED THE JAWS TO HIS CHATEAU AND DISPLAYED THEM THERE, BUT IN 1795 THE FRENCH REPUBLICAN ARMY INVADED THE AREA...
NO-HALT! ORDERS ARE TO LEAVE THIS CHATEAU ALONE— SOME STORY OF A PRECIOUS JAWBONE!
SO THE SOLDIERS FOUND NOTHING— HOWEVER, THE CUNNING GENERAL OFFERED A PRIZE OF 600 BOTTLES OF GOOD WINE FOR THE RECOVERY OF THE JAWBONES AND, VERY SOON, THEY WERE FOUND!
I CAN'T WAIT TO GET MY HANDS ON THAT PRIZE!
THE JAWS WERE TAKEN TO THE FAMOUS EXPERT BARON CUVIER FOR HIS OPINION....
FROM LATER FOSSIL FINDS WE NOW KNOW THAT THE FEARSOME MOSASAURUS LIVED IN THE SEAS IN THE CRETACEOUS PERIOD. IT HAD A BODY LIKE A CROCODILE, AND WITH ITS SHARP TEETH IT COULD DEVOUR ANYTHING IT COULD CATCH. IT WAS ONE OF THE LARGEST LIZARDS THAT EVER LIVED

Improve and test your knowledge with...

DINO Fact File

Follow the footprints to complete the quiz and get to the bottom of the question!

1 **How did nodosaurids defend themselves?**

a) they bit their prey
b) they ran away
c) they crouched down

2 **Which special feature did ankylosaurids have?**

a) a nose horn
b) a big frill
c) a club-ended tail

Full of hot air

Sailing high above the Dinosaur Provincial Park in Alberta, Canada, is a 39m-high Tyrannosaurus rex. People can look out for the remains of real dinosaurs on the ground below, while drifting along in the basket of this huge dinosaur hot air balloon.

6 **Why was *Saltasaurus* an unusual sauropod?**

a) it had a short neck
b) it was armour plated
c) it ate meat

7 **In which period did the mosasaurs live?**

a) the Jurassic
b) the Triassic
c) the Cretaceous

8 **What was *Plotosaurus*?**

a) a fish
b) a mosasaur
c) a dinosaur

9 **Apart from its young, what did *Coelophysis* eat?**

a) other kinds of dinosaurs
b) lizards, insects and amphibians
c) leaves

Eating jelly

Huge turtles lived in the seas during the Cretaceous. The largest was Archelon, which was 3.7m long – as big as a large estate car. Despite its giant size, Archelon had weak jaws and no teeth, and probably only ate jellyfish.

10 **How long was the dinosaur *Dryptosaurus*?**

a) 6m
b) 70cm
c) 60m

Spines and scales

Sauropods, such as Diplodocus, were often thought to have skin like elephants. But scientists have recently discovered that their skin was probably more like that of a crocodile with scales up to 3cm across.

3 **What does *Dyoplosaurus* mean?**

- a) double-armoured reptile
- b) two-toned lizard
- c) double-breasted jacket

4 **Where were the bones of many *Coelophysis* found?**

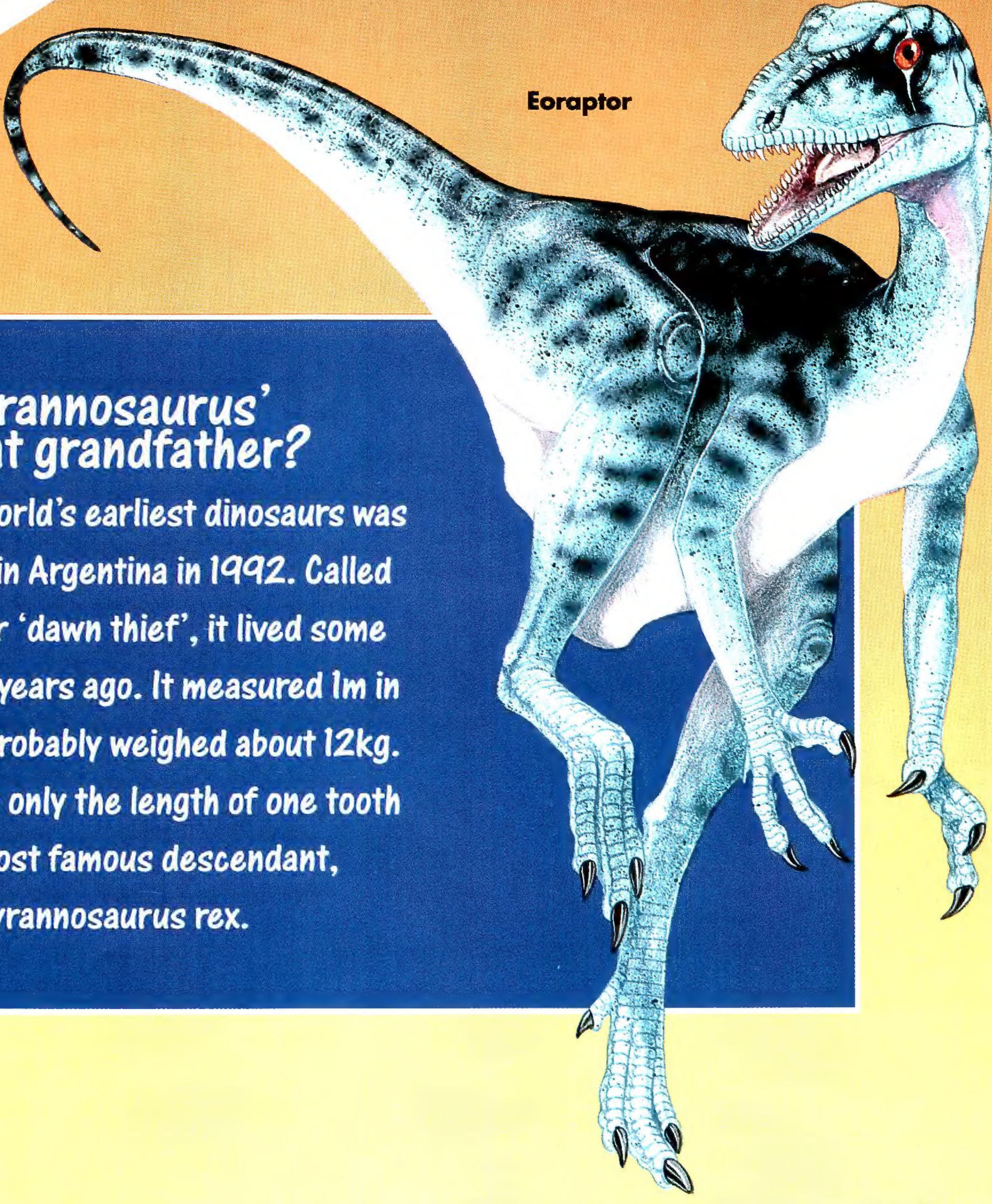
- a) Spirit City
- b) Ghost Ranch
- c) Phantom Farm

5 **On which modern continent did *Homalocephale* live?**

- a) Asia
- b) Europe
- c) Africa

A photographic eye

Trilobites, prehistoric sea creatures that were related to crabs and lived some 400 million years ago, had complicated eyes. Each eye was made up of over 20,000 lenses, which meant that the animal could see in all directions – even behind. Some of these lenses are so well preserved that scientists have been able to take photographs through them!



Eoraptor

Tyrannosaurus' great grandfather?

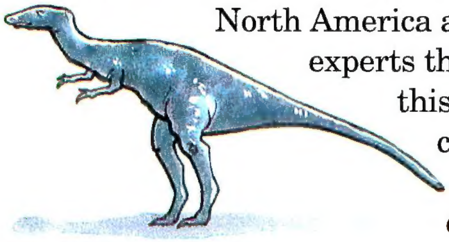
One of the world's earliest dinosaurs was discovered in Argentina in 1992. Called Eoraptor, or 'dawn thief', it lived some 225 million years ago. It measured 1m in length and probably weighed about 12kg. Its skull was only the length of one tooth of its most famous descendant, Tyrannosaurus rex.

Answers to the questions on inside back cover

DRYOSAURUS **150 MYA**

Dryosaurus (dry-oh-saw-rus) means 'oak reptile'. This plant-eating dinosaur was as long as a car and could move swiftly on its strong hind legs, using its tail to balance the front part of its body. It nipped off shoots with its toothless beak and chopped them up with its teeth. *Dryosaurus* may have stored food in its fleshy cheeks while chewing.

Because it has been found in Africa, North America and Europe, experts think that this dinosaur could travel long distances.

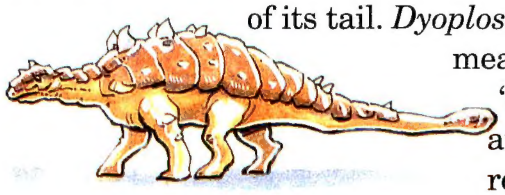


DRYPTOSAURUS **80 MYA**

No one is really sure what this meat-eating dinosaur looked like. Teeth and jaw bones have been found all over North America and a skeleton was discovered in 1866. *Dryptosaurus* (drip-toe-saw-rus) was longer than 6m and was slimly built. It walked on two legs and used its sharp, curved claws and powerful arms to tear away the flesh of its prey. Its name means 'wounding reptile'.

DYOPLOSAURUS **80 MYA**

This plant-eating armoured dinosaur lived in North America during the Cretaceous Period. One of its most striking features was the four blocks of bone shaped like a club at the end of its tail. Most of its 6m-long body was protected by raised studs, which gave *Dyoplosaurus* (die-o-plo-saw-rus) good protection from predators. When attacked, it could scare off other dinosaurs with a swipe of its tail. *Dyoplosaurus* means 'double-armoured reptile'.



DYSTYLOSAURUS **150 MYA**

Dystylosaurus (die-stile-oh-saw-rus) lived in the Late Jurassic Period in North America. In 1985, a bone from the spine of this huge dinosaur was uncovered and was more than 1m long. This four-legged plant-eater's name means 'two-beam lizard'. It probably looked like long-necked *Brachiosaurus*.

E

EDMONTONIA **80 MYA**

Edmontonia (ed-mon-tone-ia) lived in Canada and the USA in the Late Cretaceous. This dinosaur was covered with raised bony studs. A row of spikes along its sides gave *Edmontonia* added protection as it broke off low-growing plants with its toothless beak.

MYA = MILLION YEARS AGO

COMING IN PART 15 OF

DINOSAURS!

IDENTIKIT looks at *Anatotitan*, the dinosaur that often got into deep water, *Tuojiangosaurus* and *Daspletosaurus*. PLUS: The last of the pterosaurs fly into DINOSAUR WORLD.

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PLUS

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AND

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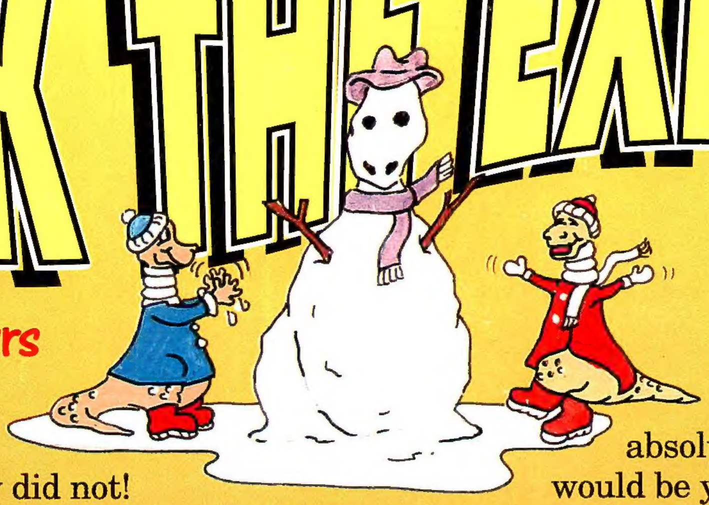
ANSWERS TO DINO FACT FILE QUESTIONS: 1.c 2.c 3.a 4.b 5.a 6.b 7.c 8.b 9.b 10.a

ASK THE EXPERT

Dr. David Norman of Cambridge University answers your dinosaur questions

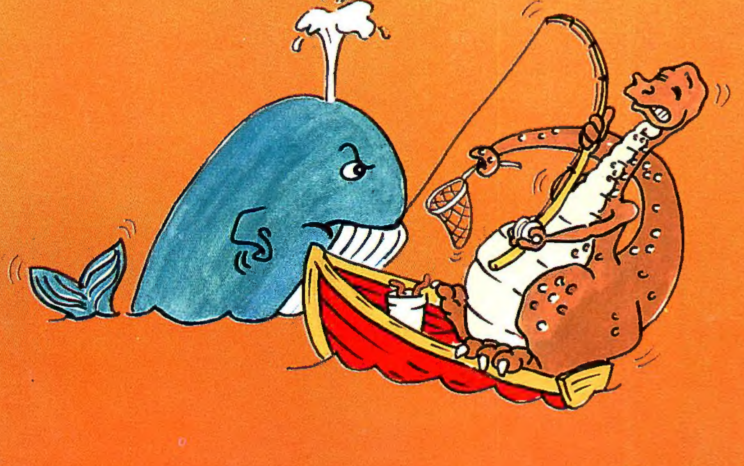


How did dinosaurs cope with very cold weather?

Quite simply – they did not! When dinosaurs lived, there were no ice-covered North and South Poles and the weather was quite mild. In fact, by today's standards, it was probably uncomfortably hot throughout the world. It would have been cooler nearer the poles and so dinosaurs migrated to these areas to feed in the summer, but travelled back toward the equator during the winter.

Did any dinosaurs eat mammals?

Fast meat-eating dinosaurs, such as *Troodon*, may well have fed on little furry mammals. These dinosaurs had long, agile hands for catching scampering animals. Small mammals did most of their hunting at dusk, so dinosaurs like *Troodon* had eyes as large as saucers for spotting their prey in the failing light.

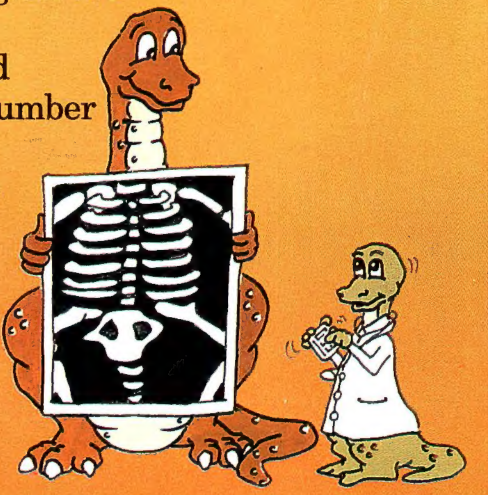


Could T rex swim?

Although we cannot be absolutely sure, my guess would be yes – *T rex* probably could swim. Despite its huge size, *T rex* was relatively light. It had lots of air-filled spaces in its bones, which would have helped it to float in water, and with its long, powerful back legs it may have been a good swimmer.

What sort of dinosaur had the most bones in its skeleton?

Most dinosaurs had roughly the same number of bones – about 300. This means that tiny *Compsognathus* and massive *Seismosaurus* had about the same number of bones. But the ankylosaurs were the boniest of all the dinosaurs. Some had hundreds of bones welded to their bodies or forming studs on their skin. Spiky *Sauropelta*, for example, may have had as many as 1000 bones.



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